REMARKS/ARGUMENTS

Clarifying amendments have been made to claims 1-10, 13-21, 23, 30 and 31 to improve the clarity and readability of the subject matter of the claims and for no other reason. The remainder of the claims are unchanged.

The Examiner has rejected claims 1, 8, 11-14, 20-37 under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent App. Pub. No. 2002/0176584 (Kates) and U.S. Patent App. Pub. No. 2003/0064746 (Rader et al.). The remainder of the claims have been rejected under 35 U.S.C. 103(a) as being unpatentable over Kates and Rader et al. in further view of U.S. Patent App. Pub. No. 2003/0073408 (Harrel et al.) or U.S. Patent No. 7,050,592 (Iseberg et al.).

The Applicant respectfully submits that the subject matter defined by the amended claims would have not have been obvious to a person of skill in the art at the time the invention was made in view of the above-noted references for reasons set forth below. Reconsideration and withdrawal of the rejections under 35 U.S.C. 103(a) is requested for the following reasons.

Kates describes a method and apparatus for the initializing, fitting and performance measuring of hearing aids. Figure 1 and paragraph [0008] of Kates, which were cited by the Examiner, teaches a conventional hearing aid test system 101 in which the hearing aid 110 is placed in a test box 102. An external computer 104 generates an electric test signal which is sent to a loudspeaker 108 which produces an acoustic test signal 109 within the test box 102. The output of the hearing aid 110 is an acoustic signal that is transmitted via a piece of tubing 113 to an acoustic coupler 114 comprising a microphone 118. The acoustic coupler 114 in turn is connected to the external computer 104 which acquires the output of the microphone 118. Both the microphone 118 and speaker 108 of the test system 101 in Kates are **external to the acoustic device under test.** Furthermore, the both the input and the output of the hearing aid 110 in Kates is an **acoustic signal**. The invention described later in Kates incorporates initializing, fitting and performance measuring features into a digital signal processing (DSP) circuit of a hearing aid such as the hearing aid 110.

While this distinction is likely known to the Examiner, the Applicant wishes to note that an ***electric*** audio signal is different than an ***acoustic*** audio signal. The claimed invention makes reference to both. As would be understood to a person of ordinary skill in the art, an electric audio signal is an inaudible electric signal which represents an acoustic audio signal. An **electric** audio signal is converted to an **acoustic** audio signal via transducers during reproduction on audio equipment such as in the speaker of the claimed acoustic device.

The Examiner states that Kates discloses all of the features of claim 1 except for the acoustic device comprising an auxiliary output device coupled to the microprocessor. The Examiner then looks to Rader et al. for this feature. The Applicant respectfully submits that the Examiner has not fully considered each and every limitation of the claims.

Claim 1 is directed to a method of testing the audio performance of an acoustic device such as a wireless communication device. In steps (a), (b) and (c), an electric audio signal is produced (for example, via the audio generator 5) and provided as input to an external test speaker which outputs an acoustic audio signal representation thereof. The acoustic audio signal output from the external speaker is input to the device microphone, which outputs a further electric audio signal representation thereof. Kates describes similar features in that an external computer 104 generates an electric test signal which is sent to a loudspeaker 108 which produces an acoustic test signal 109 which is received as input (the input the sound signal 152 (FIG. 1A)) via the internal microphone 154 of the hearing aid 110. However, steps (d) and (e) recite the additional limitations of routing the further electric audio signal using the microprocessor **from the device microphone to an auxiliary output device** where it is output externally from the acoustic device, and then analyzing the further electric audio signal **output from the auxiliary output device.**

In contrast to the claimed invention, as shown in FIG. 1A and described in paragraph [0007], in Kates the microphone 154 of the hearing aid 110 receives the input acoustic audio signal 152 and converts it to an electric audio signal which is processed by the DSP circuit 156, amplified by the amplifier 160, and converted back to

an acoustic audio signal 162 by the receiver 160. It is the acoustic **audio signal 162** which is output and transmitted via the tubing 113 to the audio coupler 114. In Kates, the external microphone 118 of the audio coupler 114 is required to generate a further electric audio signal from the **audio signal 162** received via the tubing 113 which is then fed back to the external computer 104 for analysis. Thus, the input to the computer 104 is from the external microphone 118 of the audio coupler 114 in Kates, not the device under test. The claimed invention uses the **auxiliary output device** to output the further electric audio signal by using the internal circuitry (i.e., the microprocessor) of the device to avoid the need for an external microphone and its associated connections, the errors and inaccuracies resulting from the distorted and weaker signal which is obtained by using the external microphone, and the loss in data integrity resulting from the additional conversions between an electric and acoustic audio signal which are required when using the external microphone. The claimed invention allows the electric audio signal output from the device microphone to be directly tested and analyzed. This does not occur in Kates as an external microphone 118 is required to obtain an electric audio signal, and even then the electric audio signal is based on a signal which has been modified by the amplifier 160 and so does not allow the signal from the device microphone to be tested, only the processed and amplified output of the hearing aid itself. A further advantage offered by the claimed invention is that the auxiliary output device (e.g., serial data port) can be used for purposes other than testing an audio signal and then configured in a test configuration to output an electrical audio test signal.

In view of the foregoing, it will be appreciated that the following features of the claims are not found in Kates: (1) routing the further electric audio signal using the microprocessor from the device microphone to an auxiliary output device; and (2) analyzing the further electric audio signal outputted from the auxiliary output device. Thus, the deficiencies of Kates are not merely that Kates does not describe an acoustic device comprising an auxiliary output device coupled to the microprocessor as suggested by the Examiner. When claim 1 is read as a whole, it will be appreciated that Kates does not disclose, nor teach or suggest, outputting an **electric audio signal from the device microphone** of the acoustic device to an external device for testing.

The auxiliary output device, while also not found in Kates, is the interface for implementing this function. In contrast, the recited passages of Kates teach outputting an amplified acoustic audio signal from the amplifier of a hearing aid.

The Examiner relies on Rader et al. as teaching the auxiliary output device in the claimed invention. Rader et al. describes a mobile phone which is configured to enhance the reception of audio by the user of the mobile phone by compensating for any hearing loss and preferences of the user via a hearing profile of the user. The mobile phone includes an accessory port 213 coupled to the input/output controller 210 used for other types of input/output devices such as alternative communication channels. While Rader et al. describes an auxiliary output device in the accessory port 213, he does not describe, nor teach or suggest using the accessory port to route **electric audio signals** from the microphone and outputting the electric audio signals for analysis by an external test system. Rader et al. teaches using the accessory port 213 to **output acoustic audio signals** to binaural or monaural headphones (see for example, paragraph [0038]).

Thus, even when combined Kates and Rader et al. do not disclose each and every feature of amended claim 1. The device of Kates would have to undergo substantial adaptations and modifications to arrive at a device which outputs an **electric audio signal** from the device microphone, including removing the amplifier and receiver to output an **electric audio signal** from the device microphone. There is no teaching or suggestion in Kates or Rader et al. for doing so, and the Examiner has not provided any apparent reason why a person of ordinary skill in the art would modify the hearing aid 110 of Kates and combine it with the accessory port 213 of Rader et al. to arrive at the elements in the manner claimed. In fact, the very function of the hearing aid in Kates would be negated by making the above modifications as the device would produce an inaudible, un-amplified signal. The reason for combining Kates and Rader et al. which was given by Examiner was based on the Examiner's reading of these references and his finding that the only difference between amended claim 1 and the device of Kates is that the acoustic device comprises an auxiliary output device coupled to the microprocessor. However, as described above, this is not the only difference. There structural and functional differences between how the claimed

invention is implemented and the devices of Kates and Rader et al. which have not been considered, and for which there is no teaching or suggestion in Kates or Rader et al.

The features of (1) routing the further electric audio signal using the microprocessor from the device microphone to an auxiliary output device; and (2) analyzing the further electric audio signal outputted from the auxiliary output device, are similarly not found in Harrel et al. or Iseberg et al., as explained in detail in the Applicant's previous reply.

Claim 23 is directed to a system for testing the audio performance of acoustic devices comprising an external speaker and an acoustic device. Similar to the acoustic device in claim 1, the acoustic device in claim 23 is configured to: receive a further electric audio signal representation of the acoustic audio signal from the device microphone as input; and route the further electric audio signal to the auxiliary output device for output therefrom to an external test system for analysis. Thus, the above comments regarding claim 1 also apply to claim 23.

Claim 14 is directed to a method of testing the audio performance of an acoustic device such as a wireless communication device. In steps (a), (b) and (c), a speaker test **electric** audio signal is generated and input to the auxiliary input device of the acoustic device, and then routed using the microprocessor from the auxiliary input device to the device speaker. The device speaker then outputs an **acoustic** audio signal, which is received via an external microphone, which outputs an electric audio signal to an external test system for analysis. Thus, in claim 14 it is the speaker that is being tested. In Kates, the external computer 104 generates an electric audio signal which is sent to the loudspeaker 108 which then produces the acoustic audio signal 109. Thus, the acoustic device (hearing aid 110) in Kates receives an audio acoustic audio signal 109 via the microphone 154. Not only does the device in Kates not include an auxiliary input device, it does not receive an **electric** audio signal. Electric audio signals are produced internally within the hearing aid for processing via the DSP 156 and amplifier 60, however both the input and output of the hearing aid is an acoustic audio signal. Thus, deficiencies of Kates are not limited to the fact that it does not

include an auxiliary input device as suggested by the Examiner.

While Rader et al. describes an auxiliary input device in the accessory port 213, he does not describe, nor teach or suggest using the accessory port to route electric audio signals received by the auxiliary input device to the speaker of the mobile phone. Rader et al. teaches using the accessory port 213 to output acoustic **audio signals** to binaural or monaural headphones (see for example, paragraph [0038]).

As described above in connection with claim 1, there is no teaching or suggestion in Kates or Rader et al., and the Examiner has not provided any apparent reason why, a person of ordinary skill in the art would modify the hearing aid 110 of Kates and combine it with the accessory port 213 of Rader et al. to arrive at the elements in the manner claimed. The above-noted features are similarly not found in Harrel et al. or Iseberg et al., as explained in detail in the Applicant's previous reply.

Claim 31 is directed to a system for testing the audio performance of acoustic devices comprising an external microphone and an acoustic device. Similar to the acoustic device in claim 14, the acoustic device in claim 31 is configured to: receive an speaker test electric audio signal at the auxiliary input device; and route the speaker test electric audio signal from the auxiliary input device to the device speaker for outputting an device speaker acoustic audio signal representation of the speaker test electric audio signal. Thus, the above comments regarding claim 14 also apply to claim 31.

In sum, the cited references fail to describe each and every limitation of independent claims 1, 14, 23 and 31. In addition, the cited references provide no teaching or suggestion, and the Examiner has provided no apparent reason why, the person would modify the hearing aid of Kates and combine it with the accessory port of Rader et al. to arrive at the elements in the manner claimed. Accordingly, the Applicant respectfully submits that the Examiner has not established a prima facie case of obviousness. Thus, independent claims 1, 14, 23 and 31 are considered to be directed to patentable subject matter. Withdrawal of the rejections under 35 U.S.C. 103(a) is respectfully requested. Claims 2-13, 15-22, 24-30 and 32-37 depend directly or

indirectly from independent claims 1, 14, 23 or 31, and are considered to be directed to patentable subject matter for at least the same reasons given for the base independent claims from which they depend.

Favourable reconsideration and allowance of the application are respectfully requested. Should the Examiner have any questions in connection with the Applicant's submissions, please contact the undersigned.

Respectfully submitted,

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Date: June 26, 2007

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